Evidence of early oral feeding in colorectal surgery

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RESUMEN

Existe mucha variabilidad en el inicio de la alimentación enteral en los pacientes intervenidos de cirugía colorrectal, incluso en muchas ocasiones estos pacientes se mantienen con sonda nasogástrica en el postoperatorio, con el supuesto de prevenir complicaciones como la dehiscencia, evisceración o eventration.

Realizamos una revisión de la evidencia clínica sobre el empleo de sonda nasogástrica y alimentación precoz consultando las bases del PubMed, Embase y la Cochrane.

Encontramos evidencia Ia, Ib a partir de meta-analisis y estudios randomizados prospectivos donde se desaconseja el uso sistemático de la sonda de descompresión gástrica y se recomienda el inicio de una alimentación precoz en la cirugía colorrectal. La dieta absoluta no aporta ningún beneficio después de una cirugía gastrointestinal y con la sonda nasogástrica no disminuyen las complicaciones postoperatorias. Sin embargo, una cirugía menos invasiva y los avances en la anestesia y analgesia contribuyen a reducir el ileo postoperatorio.

Palabras clave: Alimentación precoz. Descompresión gástrica. Cirugía colorrectal.

ABSTRACT

There is much variability regarding time to start of enteral nutrition in patients undergoing colorectal surgery. In many instances such patients are postoperatively maintained with nasogastric intubation with the aim of preventing complications such as dehiscence, evisceration or eventration.

We examine the clinical evidence regarding nasogastric tube placement and early feeding with reference to the PubMed, Embase, and Cochrane databases.

Ia and Ib evidence was obtained from meta-analyses and prospective randomized studies, where the systematic use of a gastric decompression catheter is advised against and initiation of early feeding for colorectal surgery is recommended. Fasting does not provide any benefit after gastrointestinal surgery, and the use of nasogastric tubes does not decrease postoperative complications. However, less invasive surgery and new advances in anesthesia and analgesia are contributing to a reduction in postoperative ileus.

Key words: Early feeding. Gastric decompression. Colorectal surgery.

INTRODUCTION

Use of nasogastric tube (NGT), fasting, and intravenous solution were a traditional tenet in abdominal surgery postoperative management. This postoperative rule delayed oral feeding until intestinal peristalsis was restored, with the result of lengthening the stay.

Multimodal rehabilitation is a combination of perioperative measures aimed to decrease physiological stress reaction and to improve recovery, based on a multidisciplinary action involving all sanitary staff. Under multimodal rehabilitation strategies (1-Ib,2-Ib) early feeding (EF) and selective use of nasogastric tube in the postoperative course of patients who underwent abdominal surgery are, among other guidelines, included. A decrease in morbidity and a hospital stay reduction has been proved when these perioperative measures were applied following colorectal surgery. However, in spite of these evidences, systematic use of NGT or fasting is still common in the postoperative management of colorectal surgery, as it was shown in the inquiry that took place in five European countries (3-III).
The aim of this study is to review the present situation and evidences regarding the use of NGT and EF after colorectal surgery.

METHOD

A review was implemented looking into the PubMed, Embase, and Cochrane databases. “Early feeding” or “nasogastric decompression” and “colorectal surgery” were the keywords used for the main discussion. Secondary searches were also performed to support other aspects that are dealt with in the discussion.

Studies performed until September 2007 are included in this search.

We include colorectal surgery randomized controlled trials and meta-analyses that compare patients with EF and patients who observe enteral fasting until peristalsis starts (expelling gases, stools, or peristalsis direct auscultation).

We consider EF enteral nutrition as dispensed before peristalsis starts.

We include colorectal surgery randomized trials and meta-analyses that compare individuals with regular versus selective use of gastric decompression by means of nasogastric intubation.

Other non-colorectal abdominal surgery studies are also included with the purpose of discussion, though they are not taken into account for the final conclusions.

Most of the evaluated reports show Ia and Ib evidence levels (Table I); obtained from meta-analyses and randomized prospective studies, the bibliography we found has a high evidence level.

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NASOGASTRIC TUBE (NGT) USE

Colorectal surgery, as other abdominal surgeries, involves some degree of paralytic ileus in the immediate postoperative period as a response to surgical and anesthetic trauma, and has been linked to a higher number of postoperative complications. All this justified the postoperative use of NGT to prevent ileus, intestinal distension, nausea and vomiting, and wound complications (eviscerations and evendrations), and even to protect the anastomosis.

Since the seventies many reports have been published that consider routine use of NGT unnecessary in the postoperative course of abdominal surgery, which according to some series may help develop some complications.

After evaluating the postoperative course of 200 patients, mainly operated on for colorectal resections with and without NGT, Bauer et al. (4-Ib) concluded that its regular use was unnecessary, as it caused discomfort to many subjects and because such complications were not increased in those with no NGT. Moreover, only 6% of the tubeless group needed an NGT later on.

Colvin et al. (5-Ib) compared the preoperative use of a long intestinal tube (Cantor catheter) to the intraoperative placement of an NGT and a tube-free group. They could not find any differences, and concluded that the regular use of the NG tube should be abandoned. The same conclusion was found by Racette et al. (6-Ib) in a prospective randomized study in patients undergoing elective colon resection. They found minimal differences between NGT bearers and non-bearers. Morbidity and postoperative stay were similar in both groups. Wolf et al. (7-Ib) obtained results similar to those of Racette in a randomized study, although they did find significant differences regarding abdominal distension, nausea, and vomiting, which were more frequent in patients with no NGT.

Wen-Zhang Lei et al. (8-Ib) in a prospective randomized study of 368 patients, of which 359 underwent colorectal resective surgery, reported a statistically significant higher frequency of pharyngo-tonsillitis in patients carrying an NGT.

Cheatham et al. (9-Ia), in a meta-analysis of 37 clinical trials including 6,850 patients undergoing elective laparotomy for all types of surgery, found a higher number of respiratory complications (atelectasis, fever, pneumonia) in patients bearing an NGT versus a tubeless group (p < 0.05). The use of an NGT did not decrease dehiscence, wall hernias, or hospital stay. Although patients with no NGT showed more abdominal distension and vomiting, only 7% of them needed an NG tube.

In another meta-analysis (10-Ia) published in 2005 regarding 28 studies, 7 of which were related to colorectal pathology, it was shown that intestinal function recovery was quicker in subjects carrying no NGT, with a non-significant trend towards a decrease in pulmonary complications and an increase in wound infection and ventral hernia. There were no significant differences regarding dehiscence or anastomotic leaks between both groups.

In spite of the evidence provided by these reports, many surgeons regularly apply NGTs in the postoperative course of abdominal surgery. It was shown that up to
62% of Spanish surgeons use it as a routine according to an inquiry published in 1998 (11-III). In a more recent inquiry done by AEC in 2006 there is a lesser trend to the wide-spread use of NGT, but it is still applied in 50% of cases (not yet published). This fact is difficult to explain, and perhaps results from personal experience, training, or “surgical school” reasons.

EARLY FEEDING (EF)

When to start postoperative oral feeding remains controversial and depends on each surgeon a great deal. Intestinal peristalsis auscultation and gas expelling or bowel movement are variables used by many to decide the time to start oral feeding.

The traditional idea that keeping these patients fasting in order to prevent nausea or vomiting as well as dehiscences by avoiding the passage of food through the anastomosis is not supported in the evidence shown by clinical data. Presently, there is no evidence suggesting that delaying the start of oral feeding may be beneficial for the postoperative recovery of our patients.

What do we consider early feeding?

The concept of EF in gastrointestinal surgery can be confusing. When articles about this subject were revised by us, we could find no clear description of how much time after surgery was necessary to elapse in order to define an early intake. Some publications speak of EF when intake was started within hours after surgery (12-Ib), other papers state within 24 hours (13-Ia), and EF is also described by some as an intake that is started 48 hours after surgery (14-Ib). All series agree that intake should be started before the auscultation of intestinal peristalsis, or before gases or stools are expelled. We may assume, therefore, that EF is initiated in the postoperative course before we may clinically conclude that intestinal peristalsis has been re-established.

Could it be beneficial to start early feeding?

Animal studies have shown that prolonged fasting decreases collagen deposition in scars, as well as anastomosis endurance (15-Ib,16-Ib,17-Ib). When feeding is resumed in these animals, mucosal atrophy by fasting disappears, collagen deposits raise, and colonic anastomosis endurance increases (17-Ib,18-Ib,19-Ib). Moreover, in experimental studies both in animals and humans it has been proved that EF enhances wound healing (20-Ib), allows to maintain a positive nitrogen balance, and reduces insulin resistance (21-Ib).

Postoperative hyperglycemia due to insulin resistance takes place as a response to all sorts of surgical aggression, and there is evidence that it is not helpful for postoperative evolution. This insulin resistance may be reduced if the preoperative fasting status is substituted for by a carbohydrate overload dispensed either orally or intravenously, and it could also be improved with a postoperative EF by supplying more glucose than that provided (short supply) by routine fluid therapy (21-Ib, 22-Ia).

It has also been noticed that patients suffering from abdominal trauma and acute pancreatitis seem to have a lower incidence of sepsis when EF is dispensed (23-Ib, 24-Ib). Many prospective randomized studies (25-Ib,26-Ib,27-Ia,28Ib) showed that EF decreases postoperative ileus duration and hospital stay without incrementing morbidity or mortality. A review and meta-analysis of 11 reports about 837 patients (13-Ia) undergoing low intestinal tract surgery also made it obvious that EF reduces all risk of infection (p = 0.036) as well as any anastomotic risk (p = 0.080). Vomiting chances were a bit higher in patients with EF (p = 0.046), but there are no advantages in postoperative fasting, and early oral intake is helpful for the postoperative course of these patients.

In a recent Cochrane review (29-Ia) no significant differences were found in regard to hospital stay, although there is some trend towards a reduction with EF. No significant differences were found either in anastomotic dehiscence. The final conclusion is that fasting offers no advantages over EF.

Is early feeding tolerated and absorbed properly?

It seems that EF improves patient outcome, but we may ask whether this type of feeding is well tolerated by all patients in the immediate postoperative period.

In a group review of 1,352 patients, immediate oral intake tolerance was observed in 86% of cases, and even better results were obtained when this measure was included in a multimodal rehabilitation (27-Ia) protocol. Di Fronzo et al. (14-Ib) have associated EF intolerance with male sex and total colectomy, ascribing this result to more voluminous intakes in men than in women, and large retroperitoneal dissection in total colectomy.

Andersen (29-Ia) notices a significant increase in the relative risk for vomiting in patients receiving EF (P = 0.04). When nasogastric tubes were not routinely placed at the time of surgery, placement rate due to nausea and vomiting was higher in patients given EF.

Carr et al. (30-Ib) proved that by dispensing early enteral feeding the intestine preserved its absorptive capability, and therefore well-tolerated nutrition is also useful from a metabolic point of view even when the intestine has not fully recovered its motility.
Petrelli et al. (31-Ib) linked EF intolerance (nausea and vomiting) with the intravascular volume dispersed and postoperative blood losses, as they considered that fluid collection in a third space would produce greater loop edema, hence extending the postoperative period with ileus.

Which measures may help improve postoperative ileus?

Postoperative ileus is a common denominator in decision making regarding NGT placement and EF onset. Chances of decreasing such ileus could therefore improve early oral tolerance and reduce nausea and vomiting, and that would lead to the placement of a decompressing catheter. Various postoperative hydroelectrolytic disorders, mainly related to potassium (32-Ib), have been implied in the etiopathogenesis of postoperative ileus, so correction is essential for postoperative management.

On the other hand, it has been proved that stress, anxiety, and postoperative pain result in ileus aggravation (33-Ib), and therefore sedatives and adequate, combined analgesia are essential for the control of these patients.

It has been noticed that high (thoracic) epidural analgesia (T7-T10), applied during 48 hours, inhibits stress response and decreases cardiorespiratory complications as well as postoperative ileus. Ileus is reduced by performing a segmentary blockage of the sympathetic thoracolumbar system (responsible for diminishing intestinal peristalsis) and by preserving the sacro-craneal parasympathetic system, responsible for intestinal peristalsis (34-Ia).

Being careful in surgical procedures and avoiding intestinal loop and myenteric plexus manipulations reduces or even prevents postoperative ileus, as various laparoscopic surgery studies have confirmed (35-Ib).

The use of new prokinetic drugs such as tegaserod, which stimulates GI motility (36-Ib), and opiate-antagonists like naloxone or alvimopram (a new opiate antagonist) (37-Ib) also results in beneficial effects for intestinal peristalsis.

Postoperative ileus reduction is supported by surgical advances such as laparoscopic surgery, and anesthetic and analgesic advances, which allows patients to have a faster mobilization and recovery. All these factors, together with other factors applied to the multimodal rehabilitation concept (38-IIa), permit better EF tolerance and preclude NGT use.

EVIDENCE SUMMARY

Among the programs and guidelines for the postoperative management of patients undergoing colorectal surgery, EF and NGT are two of the aspects involved in postoperative care. Multimodal rehabilitation, which has been gaining importance during the last few years, has made evident that various advantages exist when EF and a selective use of NGT are applied.

Having reviewed the relevant literature, we can assert that, at the present time, the use of NGT in the postoperative course of elective colorectal surgery needs to be selective and not customary, that EF is well tolerated and may be beneficial, and that there is Ia and Ib evidence from meta-analyses and randomized prospective studies where it is shown that:

—NGT in patients undergoing elective colorectal surgery does not prevent postoperative ileus.

—NGT does not prevent surgical wound complications (viscerection, evagination, infection) or anastomotic dehiscence.

—NGT causes nasopharyngeal complications and appreciably increases respiratory complications.

—EF causes nasopharyngeal complications and appreciably increases respiratory complications.

—When EF is implemented there is no meaningful increase in dehiscence, infection, or mortality rates.

—Fasting does not provide any benefits to the postoperative course of a gastrointestinal surgical procedure.

Many classical theories and tenets regarding the postsurgical management of patients undergoing gastrointestinal surgery should be discarded, opening a path to documented measures supported by evidence-based medicine, as is the case with EF and a selective use of gastric decompression.

REFERENCES